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FIRM-LEVEL DETERMINANTS OF DIVIDEND PAYOUT POLICY: A CROSS –COUNTRY ANALYSIS OF EUROPEAN LISTED FIRMS

Sher Bahader Khan Mashriqi[1], Basharat Khan[2], Amjad Iqbal[*3]

[1]*PhD Scholar, Department of Management Sciences, Hazara University, Mansehra, Khyber Pakhtunkhwa, Pakistan*
[2,3]*Department of Management Sciences, Hazara University, Mansehra, Khyber Pakhtunkhwa, Pakistan*

[*3]amjad.mgt@hu.edu.pk

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Amjad Iqbal

Abstract
This study examines the impact of firm-level determinants, i.e., firm size, cash flow, profitability, liquidity, lagged dividends, leverage, investment and growth opportunities, and business risk, on dividend payout policy of non-financial European firms. The study sample comprises 2,131 European listed manufacturing firms over the period 2009–2023. Moreover, to determine how the dividend payout policy is affected by various firm-specific characteristics, a high-dimensional fixed effects (HDFE) regression model is employed, alongside a binary logit model to identify which factors affect a firm's dividend-paying decisions. Consequently, the results show positive effects of historical dividends, profitability, operating cash flow, and liquidity on payout policy, as well as on the likelihood of paying dividends. The negative coefficients on size and leverage, on the other hand, indicate their negative association with dividend payouts. Furthermore, the findings reveal that the likelihood of dividends initiation is positively associated with investment and growth opportunities. However, they were not strong enough to pass the robustness test in the dividend-to-assets ratio analysis with firm fixed effects. In addition, this paper presents new empirical evidence on the impact of firm-specific attributes on dividend payout policy across European countries. Likewise, it contributes new insights into the dividend policy of non-financial publicly traded firms, thus providing practical application for policy makers, corporate managers, investors, and minority shareholders. However, numerous prior research has concentrated at the country level within the EU member states to investigate the diverse determinants of the dividend policy. In contrast, this study exclusively examines the role of firm-level factors, separately from macro-level determinants, in dividend payout strategy by using a large firm-level panel dataset spanning the recent years and a high-dimensional fixed effects (HDFE) estimator.

Introduction

Corporate finance scholars still debate how dividend policy affects investors' expectations (Momany et al., 2024). Likewise, conflicts of interest between managers and shareholders contribute to this dispute. Why firms pay dividends and why dividend payments are significant persist relevant topics of study and practice. Miller and Modigliani (1961) were the first contended that dividend policy in an ideal market is irrelevant and that the value of the firm depends on the cash earned from investments

rather than on dividend distribution. Moreover, Bernstein (1996), relying on Walter's Model (1956), argues that if returns on equity are greater than the cost of capital, dividends are not important. However, with the discovery of market imperfections, various theories have emerged to account for the level of dividends a firm distributes. There has been a considerable amount of empirical work, and numerous theories have been advanced to solve the dividend policy puzzle. For instance, Miller and Modigliani (1961) developed the irrelevance theory, on the other hand Gordon (1963) and Lintner (1962) advocate the relevance theory. Other popular theories of dividends include agency theory (Easterbrook, 1984; Jensen & Meckling, 1976), signaling theory (Bhattacharya, 1980) and (John &Williams,1985), residual theory (Al-Najjar & Kilincarslan, 2019), life cycle theory (DeAngelo et al.,2006), and catering theory (Baker and Wurgler, 2004). Collectively, these theories convey the complex nature of the dividend decision. A considerable number of studies have been undertaken on dividend strategy over the years; nevertheless, it remains a puzzle (Black, 1976), and the researchers still lack the consensus on which factors are the most important. In this regard, it is noteworthy that the debate on the subject under consideration offers valuable insights for subsequent theoretical and practical investigations.

There has been extensive research on dividend policy in the United States, whereas relatively limited concentration has been paid European countries. The study by Von Eije and Megginson (2011) is an early cross-European study; however, it fails to address the impact of firm-level characteristics on payout policy. Matos et al. (2020) study dividend policy and ESG in European companies; however, they do not use a large number of firms and employ the HDFE estimation to correct for a number of sources of unobserved heterogeneity. From country-specific studies obtained results, such as those carried out by Kuzucu (2015) for Turkey, Patra et al. (2012) for Greece, and Bokpin (2011) for Ghana, are relevant to the national context and cannot be extrapolated to the various institutional contexts of the EU. In particular, a large multi-country European panel has been used less systematically for a study of firm-specific characteristics. Consequently, current study addresses the existing gap in the literature by systematically investigate this issue.

In addition, predominant theories, such as agency, signaling and pecking order theories, highlight the significant influence of firm-specific variables on dividend distribution policy. However, empirical results are inconsistent regarding the impact of such traditional determinants, and their influence remains uncertain. The current study aims to investigate how firm-specific drivers, e.g., firm size, corporate profitability, cash flow, prior dividends, liquidity, investment & growth opportunities, leverage, and business risk, influence dividend payout policy. Furthermore, the present study analyses a sample 2,131 of non-financial European listed manufacturing companies in 12 selected major EU economies (i.e., Belgium, Denmark, France, Germany, Greece, Ireland, Italy, the Netherlands, Portugal, Spain, Switzerland, and the United Kingdom) between 2009 and 2023. Consequently, this study enhances the understanding of the dividend payout behavior of European listed manufacturing companies and contributes new knowledge in the solution of longstanding dividend policy puzzle. To accomplish these objectives, the research questions of the study are as follows: Which firm-level characteristics are most strongly associated with the likelihood of paying dividends within European non-financial firms? Do the effects of these characteristics differ systematically across countries within the European Union?

Furthermore, this research makes three unique contributions to the literature. First, it employs the more comprehensive HDFE estimator, which accounts for firm, year, industry, and country heterogeneity, thereby controlling for a broader range of confounding influences than previous European studies (von Eije & Megginson, 2011; Matos et al., 2020). Second, it relies on a large multi-country panel (N = 2,131 firms), comprising 12 European economies and spanning the period

from the aftermath of the (GFC[1]) through that of the (ESDC[2]) and the era of economic growth leading up to the pandemic. Third, the study finds that some factors, such as firm size and business risk, have qualitatively different effects on the decision to initiate dividend payments than on the level of dividend payments, which has implications for dividend signaling theory. The remainder of the paper is organized as follows: Sections (2), offering theories of dividends and hypothesis development. Subsequently, Section (3) describes empirical design and sample (model specification and data sources). Then Section (4) presents the results and discussion, while Section (5) presents key findings and conclusion.

2. Review of Prior Literature

2.1 Theories of Dividend Payout Policy

Baker and Weigand (2015) describe dividend policy as the timing, size, and the regularity of dividend distributions to shareholders. Furthermore, dividend payout strategy has received extensive theoretical and empirical attention over the past few decades (Bhattacharyya, 2007; Olubiyi, 2023). No single theory fully explains dividend policy; instead, several complementary theories underpin the hypotheses developed in this study. Agency theory suggests that reducing managers' discretionary cash flow by imposing dividends should limit opportunities for opportunistic managers to engage in transactions that benefit themselves at shareholders' expense (Easterbrook, 1984; Jensen & Meckling, 1976).

In addition, Miller and Rock (1985) and Bhattacharya (1979) contend that, in line with signaling theory, the distribution of dividends conveys credible information about a firm's future dividend prospects and financial health during the availability of information asymmetry to investors and the market. Similarly, residual theory suggests that dividends should be distributed from profits exceeding the amount needed to invest in the business (Al-Najjar & Kilincarslan, 2019). Life cycle theory suggests that larger firms have less cash needed for growth and thus more cash available to pay dividends to shareholders (Mueller, 1972).

2.2 Hypotheses

2.2.1 Dividend Payout Policy and Firm Size

As firms grow larger, agency costs are proposed to rise due to the increasing dispersion of ownership (Jensen and Meckling, 1976). To mitigate these costs, larger firms might be willing to distribute dividends more frequently to boost management credibility and help lessen agency issues (Lloyd et al., 1985). Furthermore, lower transaction and financing costs allow larger companies to pay higher dividends (Manneh & Naser, 2015). There is no clear evidence regarding the impact of this determinant. However, Al-Malkawi (2007) and Ali et al. (2023) confirmed that firm size and dividend payout policy are positively related, while a negative relationship is reported by a number of studies (i.e., Ali, 2011; Farinha, 2003; Gugler & Yurtoglu, 2003). As a result, dividend payout increases as a function of firm size, depending on which of the two motives is more prevalent: the agency cost reduction motive (positive) or the earnings retention motive for larger and diversified firms (negative). Given the above arguments, the below hypothesis is advanced:

H_1. *Dividend payout policy has a bi-directional relationship with firm size.*

2.2.2 Dividend Payout Policy and Corporate Profitability

According to the residual theory, distribution of dividends is a last resort for the firm, and that the firm will be able to pay a higher dividend if it can afford to do so. Consequently, profitability has been considered as an important criterion to be consider when formulating dividend payout decisions (H. K. Baker & Jabbouri, 2016). Other theories, like pecking order and signaling theories,

[1] Global Financial Crisis
[2] European Sovereign Debt Crisis

relate profitability to dividend behavior (Fama & French, 2002). However, the findings are not consistent; some studies have found a negative correlation (Ali et al., 2023; Kuzucu, 2015), while others have found a positive correlation (Al-Malkawi, 2007; Anuar et al., 2023). The following hypothesis is proposed based on the aforementioned theories and empirical studies:

H_2. *Dividend payout policy and corporate profitability are positively related.*

2.2.3 Cash Flow and Dividend Payout Policy

As per Jensen's (1986) free cash flow theory, when managers have excess cash, they can waste it on non-value-adding investments, which leads to inefficiencies in the company. In order to, discipline managers and control their excess cash spending on opportunistic activities, dividends can be paid (Adu-Boanyah, Ayentimi, & Osei-Yaw, 2013; Amidu & Abor, 2006; Rozeff, 1982). Furthermore, signaling and agency theories infer that dividends can reduce the information asymmetry (Ambarish et al., 1987; Bhattacharya, 1979). The fingings of the empirical research, however, are inconclusive. Therefore, a negative relationship between dividend distribution and excess cash was reported by Ali et al. (2023), whereas a number of studies (e.g., Agyei et al., 2011; Al-Kuwari, 2009) advocate the irrelevance notion that there is no association between excess cash and dividend payout (Agyei et al., 2011; Al-Kuwari, 2009). In contrast, numerous studies documented that excess cash and paying dividends are positively associated (Alli et al., 1993; Kadioglu & Yilmaz, 2017). In line with aforementioned theoretical discussion and empirical evidence, the present study proposes the following hypothesis:

H_3. *Dividend payout policy and cash flow are positively related.*

2.2.4 Dividend Payout Policy and Lagged Dividends

The current dividend distribution policy of a company is surely related to the prior dividend distribution. According to Baker et al. (1985), past dividends are fundamentally important in the U.S., as originally suggested by Lintner (1956). This result was confirmed by Dickens et al. (2002) in the banking industry. There are also a number of research studies that support a positive and significant relationship between historical dividends and current dividend payout behavior (Al-Kayed, 2017; Theis & Dutta, 2009). The following hypothesis is proposed in line with the above arguments:

H_4. *lagged dividends and dividend payout policy is positively related.*

2.2.5 Liquidity and Dividend Policy

Liquidity is the capacity to settle short-term obligations, and it is an important aspect of finance. Firms that have access to more liquid assets can more easily make payments and sustain their current dividend payment ratios (Kuo et al., 2013). There should be sufficient liquidity to facilitate business operations as well as to pay dividends to shareholders. However, not every profitable business pays dividends; companies always need to have sufficient cash reserves. Liquid assets are considered as a financial measure of firm's financial position (Mehta, 2012; Miller & Rock, 1985). However, empirical results reported in the literature have so far been questionable. Nevertheless, a number of researchers contend that liquidity and dividends are positively related (Anuar et al., 2023; Lintner, 1956).

In contrast, the evidence from other studies is inconsistent with the "liquidity hypothesis of dividends," which posits an inverse relationship (Ye et al., 2015), wherein investments may be made using liquidity left over. The following hypothesis is presented on the basis of the above theoretical considerations and empirical data:

H_5. *Dividend payout policy and liquidity have a positive relationship.*

2.2.6 Investment Opportunities and Dividend Payout Policy

Numerous studies in the available literature have provided ambiguous results regarding the impact of investment opportunities on dividend paying policy. There appears to be a relationship that is

affected by the firm-specific and contextual attributes. However, a number of studies (i.e., Al-Najjar, 2011; Patra, Poshakwale & Ow-Yong, 2012) indicated that the investment opportunity positively influences dividend decision. On the other hand, some studies reported negative relationship (Al-Kayed, 2017; Yusof & Ismail, 2016). Consequently, the conflicting empirical evidence can be justified by the argument of life cycle theory, which suggests that successful and mature companies with fewer growing prospects inclined to distribute higher dividends (Gaver & Gaver, 1993; Grullon et al., 2002), whereas firms in the early stage of development have greater growth potential, lower cash flow, and require more outside financing (Fama & French, 2002; DeAngelo et al., 2006). It can also be interpreted through agency theory that higher dividends should offset the agency problems associated with excess cash flow when investment opportunities may be less fruitful (Khan et al., 2022). Furthermore, dividend policy can be incorporated in the investment policy of any company to strike a balance between the interests of the managers and shareholders (Myers, 1984). The subsequent reciprocal hypothesis is advanced on the basis of these viewpoints:

H_6. *Dividend payout policy is influenced by Investment and growth opportunities.*

2.2.7 Leverage and Dividend Payout Policy

Growth financing schemes are generally financed by internal and external sources of financing (Khan et al., 2022). However, higher dividend payments also mean that less capital would be reinvested in the business and that the firm becomes more dependent on external sources of financing, which generally carry additional risks (Manneh & Naser, 2015). Furthermore, Adu-Boanyah et al. (2013) contend that highly leveraged companies are less financiallly flexible, including in therir ability to pay dividends. In addition, excessive leverage can make it more difficult to implement a stable dividend policy because of the increased risk of bankruptcy and higher transaction costs (Rozeff, 1982). The vast majority of empirical articles (i.e., Al-Kuwari, 2009; Al-Malkawi, 2007; and Iqbal et al, 2020a). demonstrate that dividend distribution and leverage are negatively related The results of the above-mentioned empirical studies are used here to elaborate the following hypothesis:

H_7: *Dividend payout policy and leverage are negatively associated.*

2.2.8 Dividend Policy and Business Risk

Business risk is the probability of unexpected losses due to unknown factors in the business and market (Putri et al., 2023). The empirical findings reveal that business risk and dividend payment are a negatively related, as supported by Alzomaia and Al-khadhiri (2013), Amidu and Abor (2006), Bokpin (2011), and Patra et al (2012). The empirical results validate this negative relationship, as indicated by the negative relationship between earnings volatility and business risk (Alzomaia & Al-khadhiri, 2013; Amidu & Abor, 2006; Bokpin, 2011; Patra et al., 2012). However, in a world of uncertainty, dividends can also be used for signaling purposes. In favorable situations, companies reveal their financial strength by rewarding shareholders with stable dividends, while in less favorable situations, they can also reassure shareholders that the company will remain financially strong if it pays a steady dividend (Hoberg & Prabhala, 2009). Therefore, it is assumed that a company which is at high risk in conducting business will have lower dividends because the inherent instability of its earnings. Based on the above discussion, the study proposes an opposite relation between dividend payout policy and business risk.

H_8: *Business risk and dividend payout policy have an inverse relationship.*

Table 1: Summary of Research Hypotheses

H	*Variable*	*Theoretical Basis*	*Expected Sign*	*Supporting Studies*
H1	Firm Size	Agency cost, CF hypothesis	+/-	*Lloyd et al. (1985); Harada & Nguyen (2011)*
H2	Corporate Profitability	Residual theory; signaling; pecking order	+	Fama & French (2002)
H3	Cash Flow	Jensen (1986) CF/agency view	+	*Alli et al. (1993); Kadioglu & Yilmaz (2017)*
H4	Lagged Dividend	Lintner (1956) dividend smoothing	+	*Al-Kayed (2017); Theis & Dutta (2009)*
H5	Liquidity	Financial flexibility; signaling	+	*Mehta (2012); Lintner (1956)*
H6	Investment & growth opportunities	Life cycle theory; agency theory	+/−	*Al-Najjar (2011); Fama & French (2002)*
H7	Leverage	Financing constraints; transaction costs	−	*Rozeff (1982); Al-Kuwari (2009)*
H8	Business Risk	Earnings volatility, signaling, payout capacity	−	Hoberg & Prabhala (2009) *Alzomaia & Al-khadhiri (2013); Amidu & Abor (2006)*

3. Methodology

3.1 Sample and Data Sources

A quantitative research design is applied, and data on non-financial firms (NFFs) from the 12 countries (the largest EU economies) are used in this study. The sample was chosen to represent the selected countries as well as the most important companies, thereby allowing fora representative quantitative analysis. The data for the study variables were retrieved from the Compustat database for the period 2009–2023. The financial sector was excluded because it has a different type of business compared to the other sectors and it has unique regulatory requirements and capital structure that could affect the results of the study. The final panel is made up of firm-year observations for the study period, and the observations are sufficiently heterogeneous to allow empirical analysis. After 42 firms were excluded from the original 2173 firms because of missing or incomplete data, finally 2131 sample firms were analyzed.

3.2. Measuring Dividend Payout Policy (DPP)

The dividend payout policy of a company is measured as dividends divided by total assets, in line with Boţoc and Pirtea (2014) and Faccio et al. (2001). Furthermore, the dividend paying tendency is used as supplementary indicator. Dewasiri et al. (2019) define the propensity to pay as a binary (either 1 if the company pays a dividend or 0 otherwise) variable.

3.3 Measurement of firm-specific determinants

3.3.1 Firm Size

Firm-specific determinants encompass firm size (FS), which is measured as a natural logarithm total asset value (Jaara et al., 2018; Khan et al., 2022). The natural logarithm of net cash flow from operating activities (occurring before financing activities) is defined as operating cash flow (OCF) (Gill et al., 2010). Additionally, the corporate profitability is defined as the ratio of the earnings before interest and taxes to total assets

(Iqbal et al., 2016). The prior year dividend yield is used as a lagged dividend (LDIV), expressed as the ratio of dividend at time t-1 divided by the share price (market value per share) at time t-1 (Al-Kayed, 2017; Mayliza & Suryadi, 2023). Similarly, liquidity (LIQ), consistent with previous studies (Al-Kayed, 2017; Putri et al., 2023), is calculated as current assets divided by current liabilities and serves as a proxy for liquidity. Following prior studies (Khan et al., 2022; Titman and Wessels, 1988), investment and growth opportunities (IGO) are expressed as the ratio of the of capital expenditures to total assets. Furthermore, the leverage ratio is obtained by dividing long term debt by total assets (book value) (Mirza & Malik, 2019; Vo & Nguyen, 2014). Finally, business risk (BRISK) is measured employing the proxy of the volatility of the earnings, as adopted by Boţoc and Pirtea (2014) and Dewasiri et al. (2019). Consistent with Khan (2019), business risk is determined by the standard deviation of the three most recent years of operating income divided by total-assets.

Table 2: Definitions and measurements of Variables

Variables	*Symbol*	*Definition*
Dividend Payout Policy	DPP	Dividends paid divided by total assets.
Firm Size	FS	Log of total assets (in natural log terms).
Corporate Profitability	CPROF	Earnings before interest and taxes (EBIT) divided by book value of total assets.
Cash Flow	CF	Log of net cash flows from operations (in natural log terms)
Lagged Dividend	LDIV	The ratio of the dividend at time t-1 divided by share price/market value per share at time t-1
Liquidity Ratio	LIQ	Current assets divided by current liabilities
Investment & Growth Opportunities	IGO	Capital expenditure divided by total assets.
Leverage (Debt-to-Assets Ratio)	LEV	The aggregate of all the debt divided by the total assets.
Business Risk	BRISK	Stdev of the operating income divided by total assets of the last three years of data (volatility of earnings)
Probability to Pay Dividend	PPD	Dummy variable (1 if a company pays dividends and 0 otherwise).

3.3 Econometric Models

Logit Model for probability to pay dividend:

$$\Pr(PPD_{it} = 1|X_{it}, \alpha_i) = f\ (\beta X_{it} + \alpha_i)$$

Where Pr denotes probability, PPD_{it} equals 1 if firm i pays dividends in year t; X_{it} denotes firm-level covariates; α_i captures unobserved firm effects; f (·) is the logistic function.

To account for within-firm correlation across repeated observations, standard errors in the logit model are clustered at the firm level, consistent with the treatment applied in the HDFE specification (Wooldridge, 2010).

Pooled OLS Econometric Model:

$$DPP_{it} = \beta_0 + \beta_1 FS_{it} + \beta_2 CPROF_{it} + \beta_3 CF_{it} + \beta_4 LDIV_{it} + \beta_5 LIQ_{it} + \beta_6 IGO_{ti} + \beta_7 LEV_{it} + \beta_8 BRISK_{it} + \varepsilon_{it}$$

Where:

DPP_{it} = dividend payout policy of firm i at time t. Explanatory variables are firm size, profitability, cash flow, lagged dividend, liquidity, growth opportunities, and business risk. ε_{it} is the error term capturing unobserved influences.

Random-effects panel regression

$$DPP_{it} = \beta_0 + \beta_1 FS_{it} + \beta_2 CPROF_{it} + \beta_3 CF_{it} + \beta_4 LDIV_{it} + \beta_5 LIQ_{it} + \beta_6 IGO_{ti} + \beta_7 LEV_{it} + \beta_8 BRISK_{it} + \mu_i + +\varepsilon_{it}$$

Where:
DPP_{it}= dividend payout policy of firm i in year t, u_i = firm-specific random effect (assumed uncorrelated with regressors), ε_{it} = idiosyncratic error term.

Fixed-effects panel regression

$$DPP_{it} = \beta_0 + \beta_1 FS_{it} + \beta_2 CPROF_{it} + \beta_3 CF_{it} + \beta_4 LDIV_{it} + \beta_5 LIQ_{it} + \beta_6 IGO_{ti} + \beta_7 LEV_{it} + \beta_8 BRISK_{it} + \alpha_i + \varepsilon_{it}$$

Where:
DPP_{it} = dividend payout for firm i at time t; Size, Profit, CF, Lag Div, Liq, Growth, LEV and Risk are the listed covariates; α_i = firm fixed effect; ε_{it} = idiosyncratic error.

Multi-way fixed effects regression / High-dimensional fixed effects regression (HDFE)

$$DPP_{it} = \beta_0 + \beta_1 FS_{it} + \beta_2 CPROF_{it} + \beta_3 CF_{it} + \beta_4 LDIV_{it} + \beta_5 LIQ_{it} + \beta_6 IGO_{ti} + \beta_7 LEV_{it} + \beta_8 BRISK_{it} + \alpha_i + \gamma_t + \delta_j + \theta_c + \varepsilon_{it}$$

where DPP_{it} is the dividend payout policy of firm i at time t, α_i is the firm-specific fixed effect (absorbed via the within-transformation), γ_t, δ_j, and θ_c denote the year, the industry, and the country fixed effects, respectively, and ε_{it} denotes the idiosyncratic error term. Within-firm serial correlation and heteroskedasticity are addressed by clustering standard errors at the firm level. The explanatory variables include firm size, profitability, cash flow, lagged dividends, liquidity, growth opportunities, leverage, and business risk.

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3.3.1 Model Specification

A systematic series of diagnostic procedures is used to select the empirical model. As a baseline, a pooled OLS regression is used; however, this approach requires homogeneity across firms and time, which is unlikely to be satisfied due to cross-sectional and temporal heteroskedasticity in the panel. The Variance Inflation Factor (VIF) is to examine the presence of multicollinearity (all VIFs are less than 10), and the Breusch–Pagan/Cook–Weisberg test is employed to assess heteroskedasticity (no Breusch–Pagan/Cook–Weisberg test is statistically significant) in the model specification. Furthermore, these issues are addressed with appropriate methods.

Due to the presence of firm-specific unobserved heterogeneity, both the random-effects (RE) and fixed- effects (FE) regression models are estimated. The Hausman (1978) test is then conducted, and the results favors the FE model, as the regressors are shown to be correlated with the unobserved differences between firms. The study employs the multi-way (high-dimensional) fixed-effects model (MWFE/HDFE), which allows the incorporation of firm-, year-, industry, and country-specific factors that help reduce the impact of non-operationalized omitted variable bias (OVB). Standard errors are firm-robust.

4. Results and Discussion

Data analysis began with descriptive analysis, followed by a binary logistic regression model to test the propensity to pay dividends (PPD). The dividend initiation variable is a dichotomous variable coded as zero (no dividend) and one (dividend). Greene (2003) points out that the logit model is particularly well suited for a dichotomous response variable. The findings are comparable to those reported by Al-Najjar and Kilincarslan (2017) and Bataineh (2021). Each of the significant determinants and their relative effects is demonstrated in Table 4.

4.1 Descriptive Analysis

The descriptive statistics for 2,131 firms (31,677 firm-year observations over the 15-year period from 2009 to 2023) are reported in Panel A of Table 3. The dividend payout policy (dividends-to-assets) has an average value of 0.010, standard deviation of 0.024, minimum value of 0.000, and maximum value of 0.152 across the companies in the sample. Consequently, companies pay dividends averaging approximately 1 per cent of assets, from as little as 0 per cent to 15 per cent.

Comparable variation also evident in the independent variables. The average firm size, as measured by the log of total assets, is 4.700; the average profitability, measured by EBIT-to-assets, is 0.008; and the average cash flow, measured by the log of net operating cash flows, is 2.714. Firm size, profitability, and ability to fund improvement in operations using net operating cash flows are moderate and marginally stable. The average investment and growth opportunities (capital expenditures-to-assets) is 0.024, and the average liquidity (current ratio) is 2.435. The mean lagged dividend yield (dividend at time t-1 divided by share price/market value per share at time t-1) is 0.187, demonstrating the stability of dividend payout behavior. The average level of business risk (the 3-year standard deviation of operating income to assets) is 0.066, demonstrating moderate level of risk. Likewise, the average leverage ratio (long-term debt/assets) is 0.524, representing a moderated level of leverage.

Table 3: Descriptive Statistics, Correlation Matrix, alongside Variance Inflation Factors (VIFs)

Variables	N. Observations	Mean	Std. Dev.	Min	Max
Panel A: Descriptive statistics					
Dividend Payout Policy	31677	0.010	0.024	0.000	0.152
Firm Size	31677	4.700	2.606	-2.748	10.56
Corporate Profitability	31677	0.008	0.185	-1.057	0.347
Cash Flow from Operation	31677	2.714	2.099	-2.631	8.258
Lag Dividend	31677	0.187	0.364	0.000	1.000
Liquidity Ratio	31677	2.435	2.456	0.198	18.19
Investment & Growth Opportunities	31677	0.024	0.035	0.000	0.194
Leverage (Debt Equity Ratio)	31677	0.524	1.195	-3.194	7.270
Business Risk	31677	0.066	0.124	0.0007	0.868

Panel B: Correlation

Variables	*DPP*	*FS*	*CPROF*	*FCF*	*LDIV*	*LIQ*	*IGO*	*LEV*	*BRISK*	*VIF*
DPP	1									
FS	0.066*	1								1.964
CPROF	0.282*	0.339*	1							1.783
CF	0.164*	0.655*	0.271*	1						1.495
LDIV	0.000	0.071*	0.024*	0.071*	1					1.013
LIQ	0.008	-0.237*	-0.120*	-0.190*	-0.065*	1				1.076
IGO	0.017*	0.178*	0.046*	0.162*	0.055*	-0.112*	1			1.044
LEV	-0.076*	0.206*	0.051*	0.175*	0.013*	-0.100*	0.031*	1		1.058
BRISK	-0.043*	-0.320*	-0.540*	-0.200*	-0.069*	0.133*	-0.062*	-0.120*	1	1.477

Note (s). *This table presents data summary, correlations between pairs of variables, and the variance inflation factors (VIFs). The sample size is N = 31677 with a range of years from 2009 to 2023. Statistical significance is denoted as *** p < 0.01, ** p < 0.05, and * p < 0.10.*

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4.2 Correlation Analysis

The multicollinearity among the explanatory variables was assessed using correlation analysis. Asteriou and Hall (2007) and Kline (2005) state that a VIF score below 10 indicates the absence of multicollinearity. As shown in Table 3, Panel B, there is no multicollinearity problem because none of the VIF values exceeds than 10.

4.3 Results

4.3.1 Logistic Regression Results

The most important determinant is profitability, which has a positive coefficient, indicating that the odds of a dividend payment increase by 6513/1,000, or by 673.3, with each 1 percent increase in the profitability ratio. This means that, all else being equal, profitable companies are much more expected to pay a dividend. Furthermore, the estimated coefficients of all explanatory variables are positive, indicating the most important being firm size, cash flow, lagged dividends, liquidity, and growth opportunities. This study provides some important insights into the necessity of financial capability and continuity to support dividend payments. Building a dividend-paying history and improving the company's cash flow have a favorable correlation with the persistent dividends payments. Table 4 reports the results of the logistic regression. The findings of the current study generally support those of Al-Kuwari (2009), Amidu and Abor (2006), Alzomaia and Al-khadhiri (2013), and Iqbal et al. (2020a); however, some interesting findings identify important constraints to dividend initiation, the foremost of which are leverage and business risk.

Overall the model goodness-of-fit for is slightly weak, with a pseudo R^2 of 0.080 and a Chi^2 of 1115.115 ($p < 0.001$), which is typical for logistic regression. To summarize, the results of the study

confirm that financial capabilities, prior dividend, and risk exposure are important elements in the analysis of EU firms' dividend policy.

4.3.2 HDFE Regression Results

The model accounts for a substantial amount of the variance in dividend payout policy (an F-statistic of 72.24, $p < 0.001$; a within-firm R2 of 0.259 and an overall R2 of 0.392). The findings demonstrate that profitability and operating cash flow have strong and positive effects, suggesting that firms with higher profitability and operating cash flow are more likely to have a higher dividend payout ratio. The economic impact is significant, with a one standard deviation (0.185) increase in profitability corresponding to an increase in the sample mean dividend payout ratio (DPP = 0.010) of around 52%. The result reported in this paper are consistent with those reported elsewhere, suggesting that the lagged dividend payment has a significant influence on the current-year dividend payment. In addition, the positive relationship between liquidity suggests that the more liquid a firm is, the more expected it is to pay dividends. The effects of investment and growth opportunities (IGO) on the dividend payout variables differ significantly across the model specifications. Consistent with the maturity hypothesis, the logit model indicates a positive and statistically significant relationship as shown by a coefficient value of 3.359 and $p < 0.01$. In addition, the relationship between investment and growth opportunities and the continuous dividend payout ratio is not significant (0.009; $p > 0.10$) in the HDFE model.

This shows that investment opportunities are likely to facilitate dividend initiation but have no systematic effect on the size of future payments. There is also a slight variation in the size effect for dividend initiation between the models. The coefficient in the logit model is positive (0.151***), indicating that large firms are more inclined to pay dividends. As shown in the HDFE model, the coefficient is negative (−0.001***), indicating that higher-productivity firms do not pay out as much in dividends. This is consistent with the retention hypothesis, although it contradicts Farinha (2003) and Gugler and Yurtoglu (2003). Likewise, according to the financing constraint theory, as the leverage increased,e dividend payments decreased. A one standard deviation increase in leverage (SD = 1.195) corresponds to a decrease in the dividend payout ratio of about 12% of the sample mean (0.0012).

The present study revealed a positive and statistically significant coefficient of business risk (BRISK = 0.010, $p < 0.01$), whereas H8 predicted a negative coefficient with an insignificant value. This finding is consistent with Hoberg and Prabhala (2009), who proposed the dividend signaling hypothesis, which indicates that firms operating in riskier environments can sustain their dividend payout decisions to reflect their willingness to withstand risk.This result is contrary to that of the other studies conducted in emerging markets (Amidu & Abor, 2006; Patra et al., 2012). This positive effect is only present in certain countries (Belgium, Italy, Ireland, and Greece) and is not important in others. Hence, it is recommended to be cautious about extrapolating the overall result (Table 5 – country-wise regressions).

Key findings from the overall results support the hypothesis that factors specific to the firm shape dividend payout policy. Profitability, availability of cash, previous dividend payments, leverage and business risk are the most significant elements affecting dividend payments. By contrast, the level of growth and investment opportunities has no systematic effect on the size of dividends paid, suggesting that dividends are well explained by the financial and operational characteristics of the firm. Similarly, there is no systematic association between growth and investment opportunities and size of dividend distribution, indicating that financial and operational factors of the firm explain dividends well.

Table 4: Regression Results

DPP	*Logit*	*POLS*	*RE*	*HDFE*
FS	0.151***(4.33)	-0.001*** (-14.52)	0.000**(-2.45)	-0.001***(-4.520)
CPROF	6.513***(17.39)	0.046***(54.19)	0.017***(22.71)	0.028***(12.860)
CF	0.101***(3.68)	0.002***(26.64)	0.001***(9.65)	0.001***(8.790)
LDIV	7.836***(16.42)	0.0001(0.38)	0.017***(20.54)	0.135***(16.340)
LIQ	0.058***(3.14)	0.0003***(6.25)	0.000***(4.34)	0.000***(3.730)
IGO	3.359***(3.53)	0.003(0.84)	0.019***(5.24)	0.009(1.610)
LEV	-0.078***(-3.07)	-0.002***(-15.62)	-0.001***(-5.78)	-0.001***(-9.960)
BRISK	-1.660***(-4.36)	0.026***(20.98)	0.006***(5.88)	0.010***(4.710)
Constant		0.008***(20.62)	0.005***(8.08)	-0.016***(-10.190)
Pseudo R^2/ R^2	0.080	0.123	0.043	0.3924
within R^2				0.2594
Log-Likelihood (Log-L)	−6414.214			
LR χ^2	1115.12***			
F-stat		556.150		72.24***
Wald χ^2			1203.627***	
Yr. Fixed –effects[3]				Yes
Ind. Fixed-effects				Yes
Ctry - Fixed-effects				Yes
Breusch-Pagan / Cook-Weisberg χ^2			14327.58***	
Hausman χ^2			686.46***	
Observations	17,393	31,677	31,677	31,603

Note: *This table shows Results with Standard Errors Clustering at the Firm Level for Random effects, logistic regression, Pooled OLS, and MWFE/HDFE models. 31,677 firm-year observations from 2009 to 2023 make up the sample.The significance of the coefficients is indicated as: *** $p < 0.01$; ** $p < 0.05$; * $p < 0.10$. Logit style is denoted by the z-statistic, and POLS, RE, and HDFE style by the t-statistic.*

4.4 Country-Wise Fixed-Effects Regression Results

Fixed-effects regressions are run separately for each of the 12 sample economies to examine whether the HDFE results vary across countries (Table 5, Panels A and B). The coefficient of profitability is favorable and statistically significant in 10 countries (excluding Portugal and the Netherlands), which is, again, indicates that profitability is the strongest firm-level determinant of dividend payout within the sample. In 11 countries, the coefficient of lagged dividends is positive and highly significant, with France being the exception (coefficient = 0.001, t = 0.79). This might be due to the tax structure in France (historical dividend imputation tax system) and the cross-shareholdings between listed companies. By contrast, the positive effects of investment and the positive impact of growth opportunities are much stronger in the Netherlands (0.121***) and Ireland (0.107***) than in the other economies, which implies a greater financial openness for the country and a greater orientation of the capital markets toward capital-intensive sectors, which enables firms to continue paying dividends while investing simultaneously. The coefficient of leverage is negative in most countries, whereas only the Netherlands has only a positive

[3] Firm, year γ_t, industry δ_j, and country θ_c fixed effects are all simultaneously absorbs by HDFE.

coefficient (0.001***). This may be due to the unique ownership and financing mechanisms found in listed companies in that country. The proportion of model-explained variations of dividends is highly significant across countries, with the Within-R^2 varying from 0.98% in France to 20.47% in Denmark. Within the sample, the within-R^2 for France is relatively low, indicating that within-firm variation in dividend payout is limited and that other firm-specific or macroeconomic factors not captured in this study may play a more important role in this context.

Table 5: Country-wise fixed-effects regressions

Panel A						
DPP	***United Kingdom (1)***	***France (2)***	***Germany (3)***	***Belgium (4)***	***Denmark (5)***	***Italy (6)***
FS	-0.0001(0.69)	-0.0002(-1.26)	0.000(0.66)	-0.0002(-0.35)	-0.001***(-2.69)	-0.0007**(-2.29)
CPROF	0.005***(5.23)	0.009***(6.11)	0.021***(11.05)	0.027***(4.43)	0.044***(7.71)	0.018***(6.59)
CF	0.0001(0.49)	0.0003**(1.99)	0.001***(5.32)	0.0008(1.02)	0.0007(1.20)	0.0009***(3.56)
LDIV	0.065***(24.46)	0.001(0.79)	0.079***(18.40)	0.068***(7.04)	0.125***(11.06)	0.087***(14.76)
LIQ	-0.0001(1.64)	0.000(0.70)	0.0002(2.43)	0.0002(0.51)	0.0008**(2.46)	0.0003(.32)
IGO	0.007(1.14)	-0.003(-0.54)	0.018*(2.01)	0.028(0.51)	-0.040(-1.63)	0.020*(1.74)
LEV	-.0003(-1.80)	-0.0001(-0.85)	-0.001***(-3.91)	-0.002***(-3.02)	-0.001***(-2.99)	-0.0003*(-1.75)
BRISK	0.001(1.06)	0.005(1.33)	0.001(0.38)	0.020**(2.43)	0.005(0.473)	0.007**(2.18)
Constant	0.012***(16.55)	0.003(1.33)	0.002*(2.11)	0.011***(2.77)	0.015***(3.24)	0.004**(2.43)
R^2 *(with in)*	0.0718	0.0098	0.0950	0.0996	0.2047	0.1293
Obs.	8970	5,183	5,993	955	1,108	2,289
Firms	601	347	407	64	74	156
Panel B						
DPP	***Greece (7)***	***Portugal (8)***	***Switzerland (9)***	***Netherlands (10)***	***Spain (11)***	***Ireland (12)***
FS	0.0001(0.34)	0.001(0.99)	-0.0005(-1.01)	0.0007(1.36)	-0.001(-.106)	-0.0009(-1.56)
CPROF	0.018***(4.64)	0.008(0.55)	0.017***(3.3)	0.004(1.16)	0.012*(1.91)	0.031***(5.53)
CF	0.000(0.37)	0.000(0.963)	0.0002(0.38)	0.001***(3.23	0.0001(0.19)	0.0005(0.83)
LDIV	0.126***(19.32	0.102***(7.28)	0.049***(8.03)	0.057***(11.59)	0.071***(7.84)	0.039***(4.37)
LIQ	0.0004**(2.14)	0.001*(1.88)	-0.0001(0.608)	0.0008***(3.26)	0.0002(0.0653)	0.0001(0.74)
IGO	0.005**(0.58)	0.059(1.44)	0.046***(2.96)	0.121***(5.23)	0.030*(1.79)	0.107***(5.57)
LEV	-0.0002(-2.3)	-0.001**(-2.19)	-0.001***(-3.2)	0.001***(2.62)	-0.0001(-0.47)	-0.002***(-2.91)
BRISK	0.011*(1.91)	0.002(0.09)	0.005(1.05)	0.003(0.74)	-0.003(-0.37)	0.015**(2.23)
Constant	0.000(0.01)	-0.003(0.637)	0.013***(3.89)	-0.009***(-2.69)	0.010**(2.49)	0.007*(1.87)
R^2 *(with in)*	0.2237	0.1492	0.0488	0.1662	0.0804	0.1626
Obs.	1,741	435	2,202	1,286	987	528
Firms	117	29	147	87	66	36

Note: *This table shows the results of the fixed-effects regressions performed by country. 2131 firms and 31,677 firm-year observations from 2009 to 2023 make up the sample. The significance levels of the coefficients are indicated by **** $p < 0.01$, ** $p < 0.05$, and * $p < 0.10$; the t-values are given in parentheses.*

5. Conclusion

Corporate finance comprises dividend policy, which persists as one of the most vital research topics, and it is of utmost importance to understand how these factors determine a firm's dividend decisions. This study's sample consists of 2,131 non-financial companies in the European Union from 2009 to 2023. The probability of dividend payment was analyzed through a logit

model, and the dividend payout ratios were analyzed through fixed-effects estimation.

The results suggest that profitability, cash flow, liquidity, lagged dividend payment, and business risk matter in both the probability and the size of dividend payments. The logit model of dividend initiation indicates that signaling behavior, earnings capacity, and firms' financial flexibility, and growth opportunities are important factors to consider when assessing dividend initiation, while the firm fixed-effects model of payout ratios does not. However, the leverage rule continuously restricts the dividend payments and, by itself, serves as proxy for financing frictions. Furthermore, the study uses the extended fixed-effects model, which, based on the results of the previous studies (Harada & Nguyen, 2011), reveals that the firm size and dividend policy have a negative relationship.

Overall, these findings imply that a company's financial position and a number of other variables at the firm level have an impact on dividend decisions. The results are applicable to managers, investors, and policy makers, who could use data on a firm's profitability, financing structure, and riskiness to design and evaluate corporate payment policies.

5.1 Practical Implications

The results will be valuable to a diverse array of stakeholders. More profitable, financially sound firms that are more liquid, have greater stable cash flows, have more opportunity for growth, and having a history of dividend payments are more likely to distribute higher dividend payouts to investors. However, larger or more highly leveraged companies are more prone to cut their dividend, which is an important consideration for investors.

Furthermore, the findings suggest that it is important to consider the individual characteristics of a company when formulating the dividend policy to maintain consistency between a firm's financial capabilities and investor expectations. Firm managers, analysts, and portfolio managers can use the identified dividend determinants in their dividend models and asset allocation procedures to better account for dividend behavior. This evidence also reveals that the factors influencing dividends vary across European markets and other markets globally. Thus, results offer global investors and practitioners the opportunity to optimize their portfolio diversification across global markets. Lastly, the study highlights the need for dividend policies to be informed by the underlying economic principles in order to limit agency cost consequences and maximize shareholder value generating from dividends.

5.2 Limitations

Though the study has contributed to the discipline, it has a few limitations. The results may not be representative, as they are based on a sample of 2,131 non-financial European companies in the Compustat database from 2009 to 2023. In addition, the study period could be expanded, more firms could be included, and/or other regions could be incorporated to increase external validity.

Second, only firm-specific attributes were included, while other attributes that might influence the prospect of a spin-off going public were not taken into consideration.

Third, the analysis is conducted using Compustat data, which has the potential for survivorship bias because companies that have left the database for other reasons, such as going bankrupt, merging, or similar events, might be underrepresented. Additionally, the sample may include unrepresentative firms that survived during the global financial crisis and/or the pandemic. This could affect measures of financial stability (profitability, liquidity, etc.).

Fourth, the endogeneity of the profitability, leverage, and dividends, which affects the lagged variables, is not adequately addressed. Future studies would be improved by suing a system-GMM estimator as recommended in Arellano & Bond (1991) and Blundell & Bond (1998).

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